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### Effect of ethanolic leaf extract of *ipomoea sepiaria* on sexual behaviour in male wistar albino rats

Asokan Balakrishnan Ramajayam<sup>1</sup>, Jaikumar Sankarapillai<sup>2\*</sup>, Somasundaram Ganesan<sup>2</sup>

<sup>1</sup>Department of Pharmacology, Aarupadai Veedu Medical College, Puducherry.

<sup>2</sup>Department of Pharmacology, Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry.

\*Corresponding author: Dr. S. Jaikumar

Email: [sengt@rediffmail.com](mailto:sengt@rediffmail.com)

#### ABSTRACT

The objective of the present study is to evaluate the sexual performance (aphrodisiac activity) of ethanolic leaf extract of *Ipomoea sepiaria* on male Wistar albino rats and the effects was compared with reference control Sildenafil citrate. Male Wistar albino rats were divided in to 4 groups of 6 animals each. Ethanolic leaf extract of *Ipomoea sepiaria* (200 & 400mg/kg ) were administered orally and its sexual performance was compared to the normal and reference control animals (Sildenafil citrate 4.5mg/kg body weight). The effect of *Ipomoea sepiaria* on sexual performance in male rats were observed by mount frequency, mount latency, intromission frequency, intromission latency, genital grooming and ano – genital sniffing. The data's were analyzed using ANOVA followed by dunnetts't' test. *Ipomoea sepiaria* showed dose dependent increase in mounting frequency, intromission frequency, ano-genital sniffing and genital grooming and decrease in mount latency and intromission frequency as compared to control. The ethanolic leaf extract of *Ipomoea sepiaria* showed comparable aphrodisiac effect with the reference control Sildenafil citrate. From the result it was concluded that, ethanolic leaf extract of *Ipomoea sepiaria* exhibits dose dependent increase in sexual desire in male Wistar albino rats.

**Keywords:** *Ipomoea sepiaria*, Sexual Behaviour, Aphrodisiac and Sildenafil Citrate.

#### INTRODUCTION

Aphrodisiac originated from the Greek word Aphrodite, the Greek god of love, Sex and romance Aphrodisiacs are the substances which stimulate sexual desire [1]. Sexual relationships are some of the most important social and biological relationship in human life. Male impotence also called Erectile Dysfunction (ED) is a common medical condition that affects the sexual life of millions of men

worldwide [2, 3]. Erectile dysfunction is defined as the persistent inability to obtain and maintain an erection sufficient for naturally satisfactory intercourse. Sexual dysfunction is a serious medical and social symptom that occurs in 10-52% of men and 25-63% of women. It is the repeated inability to achieve normal sexual intercourse male impotence (or) ED is a significant problem that may contribute

to infertility function decreases spontaneously with advanced aging [4].

Although the use of allopathic medicines have shown significant improvement in treating male sexual disorders, it has been reported to have significant cardiovascular, nervous associated side effects. The probable mode of synthetic aphrodisiacs is mediate by dilating the blood vessels causing headache and fainting. Other side effects include facial flushing, stomach upset, blurred vision and sensitivity to light which usually occur at higher doses [5]. Thus, there is growing need to look for herbal or natural plant aphrodisiacs with side effects free agents as opposed to synthetic compounds which are known to cause severe unwanted side effects.

*Ipomoea sepiaria* Koenig ex. Roxb. of the family Convolvulaceae is a perennial climber growing on the bank of streams, rivers, specially over hedges. It is a glabrous or occasionally pubescent or hirsute, slender twinning with a slightly thickened or tuberous perennial root and very short stem producing annually or seasonally a number of terete villous, grayish purple branches bearing simple, cordate or ovate, variable median sized leaves, very often blotches with dull purplish patches in the centre and pink to purplish flowers in clusters on fairly long thickened clavate peduncles [3]. This plant is distributed in tropical and sub tropical regions. In traditional practice this herb is known as a good antidote for arsenic poisoning, uterine tonic, aphrodisiac and anti ulcer drug, it is reported to be used in burning sensation, diabetics also as a diuretic, deobstruent and tonic [6]. Ethnomedically the herb is considered for burning sensation, general debility and sterility in women [7]. In ayurvedic texts it is mentioned that root powder in the dose of one tea spoon is administered with rice water for leucorrhoea. Only few of traditional claim of *Ipomoea sepiaria* was scientifically proved, in the present study effort has been taken to find out the effect of ethanolic leaf extract of *Ipomoea sepiaria* on sexual function in male rats.

## MATERIALS & METHODS

### Plant Material

The leaves of *Ipomoea sepiaria* was collected from outskirts of Erode, in the month of April. The plant were identified as *Ipomoea sepiaria* and authenticated by the botanist, Botanical Survey of

India, Agricultural University, Coimbatore. The voucher specimen (BSI/SRC/11/72/2017-18/Sci/01211) had been deposited in the herbarium for future reference.

### Preparation of Extract

The collected leaves were washed in running water to remove the adhering foreign matter and shade dried. The dried plant materials were coarsely powdered by mechanical blender. The coarse powder of *Ipomoea sepiaria* leaves was soaked in 70% ethanol for 24 h followed by cold maceration for further 48 h with occasional shaking. The mixture was filtered using muslin cloth followed by removal of excess of solvent by rotatory evaporator. The dried extract of *Ipomoea sepiaria* was used for the study.

### Animals

Sexually mature male and female Wistar albino rats weighing between 180 – 200 gms of 8 weeks were used in this study. The animals were obtained from animal house, Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry. On arrival, the animals were placed at random and allocated to treatment groups in polypropylene cages with paddy husk as bedding. Animals were housed at a temperature of  $24 \pm 2^\circ\text{C}$  and relative humidity of 30 – 70 %. A 12:12 light: day cycle was followed. All animals were allowed to free access to water and fed with standard commercial pelleted rat chaw (M/s. Hindustan Lever Ltd, Mumbai). All the experimental procedures and protocols used in this study were reviewed by the Institutional Animal Ethics Committee and were in accordance with the Institutional ethical guidelines.

### Preparation of male rats

The male rats were trained, for sexual behavior, two times a day for a period of minimum of 10 days. The male rat which did not show any sexual interest during the test period was considered as an inactive male. The sexually active male rats were selected for testing aphrodisiac activity of the extracts.

### Preparation of female rats

Female rats were housed in separate cages with food and water *ad libitum*. The female rats were brought in oestrous phase by treating them with estradiol valerate (10  $\mu\text{g}$  / kg. s.c.) and hydroxy progesterone 1.5mg/kg. s.c.), for 48 hours and 5 hours prior to experimentation, respectively, to make

them sexually acceptable and were selected for the study.

### Experimental Design

The sexually active male rats were divided in to 4 groups of 6 animals each. Group I served as normal control received 0.1 % CMC (1ml/kg) through oral route. Group II served as reference control received Sildenafil citrate (5mg/kg). Group III & IV received the ethanolic leaf extract of *Ipomea sepiaria* 200 and 400mg/kg respectively. The sexual behavior of the experimental rats was observed in a dim light in specially designed cages that have glasses on all the sides and measuring 50×30×30cm. The male experimental rat was first placed in the cage and then two female rats in estrous phase were introduced. An initial period of 15 minutes was considered as acclimatization period. After 15 minutes, the test drugs were administered and the activity of male rat in each group was recorded individually for 1 hour, after 30 minutes of drug administration. To determine

the aphrodisiac activity of the extracts, several parameters were observed. These include measuring and observing the mount frequency (Mount frequency is the number of mounts made in one hour by the male rats after introducing the female rats), mount latency (Mount latency is the time interval between the introduction of female and first mount by the male), intromission frequency (introduction of one organ to another), intromission latency (Intromission latency is the interval from the time of introduction of the female to the first intromission by the male), genital grooming and ano-genital sniffing [8].

### Statistical Analysis

Results were expressed as mean ± SEM. The data were analyzed by using one way analysis of variance (ANOVA) followed by Dunnett's 't' test using GraphPad version 3. P values < 0.05 were considered as significant.

**Table I.** Effect of ethanolic leaf extract of *Ipomea sepiaria* on sexual behavior in male rats

Groups	Drug Treatment	Mount Frequency	Mount Latency (sec)	Intromission Frequency	Intromission Latency (sec)	Ano-genital Sniffing	Genital Grooming
I	Normal Control 0.1 % CMC(1ml/kg)	3.37±0.16	286.63±9.23	0.63±0.02	475.35±12.42	4.63±0.26	1.62±0.02
II	Sildenafil Citrate (5mg/kg)	12.98±0.85***	118.22±8.61***	3.05±0.22***	184.57±7.83***	13.53±0.95***	6.65±0.23**
III	<i>Ipomea sepiaria</i> (200mg/kg)	5.53±0.32*	190.33±10.55**	1.58±0.05*	253.54±9.21**	6.26±0.53	2.97±0.20*
IV	<i>Ipomea sepiaria</i> (400mg/kg)	9.32±0.54**	125.51±6.57***	2.25±0.04**	198.24±7.45***	9.65±0.21**	4.56±0.28**

Values are in Mean ±SEM; (n=6)

\*P<0.05, \*\* P<0.01 and\*\*\*P<0.001 Vs Control

### RESULT

The ethanolic leaf extract of *Ipomea sepiaria* was studied for its sexual behaviour in male Wistar albino rats and the results were presented in the table 1. Various sexual behaviors like mount frequency, mount latency, intromission frequency, intromission latency, genital grooming and ano-genital sniffing in male rats were observed. The reference control sildenafil citrate showed significant (P<0.001) increase in mount frequency, intromission frequency,

genital grooming, ano – genital sniffing and there was significant (P<0.001) decrease in mount latency and intromission latency as compared to control animals. Ethanolic leaf extract of *Ipomea sepiaria* also showed significant increase in mount frequency, intromission frequency, genital grooming, ano – genital sniffing and there was significant decrease in mount latency and intromission latency as compared to control animals. 200mg/kg of *Ipomea sepiaria* root extract showed moderate increase in sexual

behavior activity, where as 400 mg/kg showed equipotent sexual behaviour activity as that of the reference control Sildenafil citrate.

## CONCLUSION

From the results, it was concluded that, ethanolic leaf extract of *Ipomea sepiaria* showed dose

dependent increase in sexual desire in male Wistar albino rats. Further studies on phytochemical constituents, isolation of active principle and characterization may be required to explore the potent herbal aphrodisiac.

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